# Chapter Seven
# Reporting and Information Dissemination

## 7.1. Introduction

At various stages through the design and performance of the monitoring program, there will have been interaction with the end-users of the information, particularly during the setting of objectives, the detailed study design and the laboratory analyses. The monitoring team will have clearly identified the end-users' data needs and information requirements.

Once results have been obtained and interpreted, the next step is to report the findings to the people who commissioned the study. Then there can be further dissemination of the findings to other stakeholders and information users, and a system should be set up for the effective transmission of the information. Figure 7.1 is a framework for designing reporting and information dissemination systems. A checklist is presented in Table 7.1.

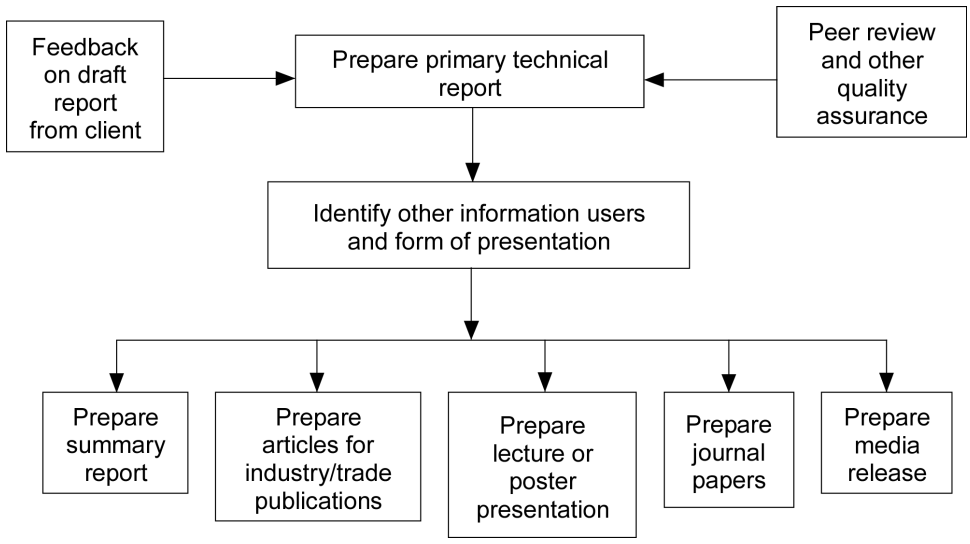


**Figure 7.1.** A framework for designing a reporting system

## 7.2. Preparation of a Primary Report

### 7.2.1. Reporting Schedule

The monitoring team should have negotiated a reporting schedule during the initial study design. A typical schedule might include the reporting of interim results on a monthly, bimonthly, quarterly or six-monthly basis. Such reports might be no more than data reports, with no or limited data interpretation because there will often be insufficient data for more detailed analysis. Interim reports provide a means for those conducting the program and those commissioning it to review progress and, if necessary, modify the study design.

**Table 7.1.** Checklist for designing a reporting system

| | |
|---|---|
| 1. | Has all the information required been obtained? |
| 2. | Have the identities of all those who want the information been ascertained? |
| 3. | Has the time frame in which each information user requires information been determined? |
| 4. | Has the appropriate form of information presentation been decided? |
| | (a) Has the level of understanding of each user been identified? |
| | (b) What form of presentation will best convey the information? |
| | (c ) Is the chosen report style consistent with the style expected by the information user? |
| 5. | Have the available forms of information transmission been ascertained? |
| | (a) What form of transmission is most appropriate for each information user (written, oral, electronic)? |
| | (b) What procedures are in place to ensure information has reached the user? |

There may be instances where the nature of the issue will make it appropriate that findings be transmitted rapidly to the end-users of the data, e.g. where there is a public health concern such as with drinking or bathing water. Rapid reporting will allow the nature of any problems to be identified early and may ensure the rapid initiation of remediation activities. In such instances, a rapid interim communication could be made, with a detailed report to follow. It is important that the pressure for results does not compromise essential quality assurance and checks of the analytical data and their analysis.

### 7.2.2. Report Format

At the completion of the study, or usually on an annual basis for on-going monitoring programs, a primary report is produced, in a form agreed to by all parties.

There are traditionally accepted styles for reporting the results of monitoring programs. The reports have a number of essential elements which make the information of value to all users:

- an Executive Summary that expresses the technical findings in relation to the objectives, succinctly and in words that are understandable by managers unfamiliar with technical detail;
- an introduction, outlining previous studies in the area or related studies, and delineating the study objectives;
- experimental detail, describing the study location and study design, including descriptions of methods of sampling and analysis;
- results — descriptive and detailed presentation of results, sometimes in combination with the Discussion section;
- discussion of the results including data interpretation and implications for management;
- conclusions drawn from the results;
- recommendations for future work;
- reference details for literature cited in the report;
- appendices, providing laboratory reports, data tables or other information that is too detailed or distracting to be included in the main body of the report.

Data summaries and graphical presentations of results significantly enhance the readability and utility of reports; they are excellent ways of presenting the data.

The primary report contains full and complete details of all aspects of the study. It includes detail of the sampling locations so they can be unambiguously identified, e.g. GPS directions. It includes information that identifies biota by size (length or weight) and sex, where this is appropriate. For sediment data, it reports grain size (at least the percentage of clay/silt <63 µm) and, where appropriate, organic carbon content. These finer points of detail make it possible to compare the data with those from other studies; without the detail, the comparisons will have little significance.

The primary report is the reference or source document for subsequent publications. It is important that the clients receive a draft version of the document to ensure that the final product will meet their expectations and cover all the issues that they had hoped to see addressed. This is the first stage of the review process.

Most organisations also have an internal review process that may occur before or after the client review, to ensure the quality of the output from the perspective of the organisation.

When a report is very large, a shorter summary report may be useful, to encapsulate the technical findings of each component of the study in an abbreviated form.

So that the client and other stakeholders can have confidence in the output, it is desirable to organise external peer review of the report. Such a review should address data quality, data interpretation, and whether the findings are scientifically acceptable and consistent with the monitoring program objectives.

The review may involve a technical review panel associated with the project, or a single expert. In all cases it is important that the reviewer be independent from those associated with the study.

## 7.3. Identifying Users and their Information Requirements

The dissemination of information to other users is not necessarily planned in advance. It can be organised after the delivery of the primary report, if necessary. The primary report would normally be made available to the clients and to a distribution list that they would nominate. Further, depending upon the commercial sensitivity of the information, the report could be made publicly available, as a result of national, regional or organisational listings of publications or other bibliographic services. Being a technical document the primary report might be too complex for other than a technical audience, and less technical versions might be needed, to describe the study outcomes, or to seek other means of disseminating information.

There is a view that where data are collected with public funds, or required as part of a licence, they should be publicly available. Some jurisdictions are now placing such data on web sites to make them widely available with minimal data extraction costs. For example, the Victorian State Water Resources Data Warehouse is available at http://www.vicwaterdata.net/. It is intended to improve community access to information about Victoria's water resources, particularly the water quality and stream-flow monitoring programs, and ultimately to provide information about marine, biological, groundwater and community monitoring.

A broad range of stakeholders and others will use the information that the monitoring program provides. They may have been involved in the study design, and could include:

- the resource manager (state, local government, catchment manager), concerned with the health of the catchment and management of the impacts of catchment activities or remedial works to ensure that desired and expected beneficial effects of investment are achieved;
- an environmental agency, needing to assess data in terms of trends, comparisons with other waterbodies, reporting for State of the Waters, or State of the Environment reports;
- individual water users, who are usually concerned when the values of particular measurements fail to remain within safe operating limits, and who need advice when concentrations depart from this range;
- industries that use the water or discharge into it; they will need to consider the significance of the results to their operations;
- community groups, similar to the water user but generally with broader interest in comparing their waterbody with a standard, and concern about catchment management, integrated land and water use, etc.;
- the general public (not necessarily local), who receive general media reports;
- the scientific community, concerned as part of particular environmental research.

The scope and format of reporting to these users will differ in complexity and technical content, depending on the users and their concerns. Each group will have different levels of understanding and technical skills. It is important that the level of understanding of each user group be identified, and that the information be conveyed to them in the most appropriate form.

## 7.4. Information Transmission

Methods for information reporting and dissemination can be categorised as follows:

- publications — these include technical reports and CD-ROMs, papers for scientific journals or books, articles in industry, trade or society journals (water industry, scientific instrumentation, trade, etc.), newsletters;
- industry and professional association conferences, seminars and workshops, community group presentations and training, open-day activities and demonstrations — platform presentation with visual aids (overhead transparencies, slides, PowerPoint presentations);
- Internet web pages;
- film and video presentations;
- media releases and media articles.

### 7.4.1. Publications

The primary report and scientific publications contain the detailed data interpretation and analysis in a well-established format. They serve a purely technical audience. There is general concern that technical reports are not made available to the wider scientific community, largely because of limited circulation, severely limiting the sharing of such findings. It is important to ensure that such material is abstracted by abstracting services such as Streamline.

CD-ROMs provide an excellent way of storing complex data sets in a form that enables wider data use. Currently the availability of CD-ROMs is similar to that of technical reports.

The scope for publishing the findings of monitoring programs in scientific journals is often limited, because the findings are typically only of local interest. In most cases, only those studies that use novel methods, or add to the understanding of particular environmental processes and systems, will be accepted for publication.

Written presentations to national or regional conferences or workshops are useful vehicles for publicising monitoring studies, as are more general articles that can be published in trade journals or journals of relevant industry groups or scientific societies.

Many organisations publish newsletters that include short reports of their activities, and these can be useful for publicising a monitoring program undertaken by the organisation or funded by it. These newsletter reports are excellent for raising awareness about the monitoring program, and can form the basis of a press release to trade journals and the media generally. Other printed material that publicises findings falls into this category also.

### 7.4.2. Meeting Presentations

Information about the monitoring program can be presented to a conference or seminar. The standard of both platform and poster presentations at conferences has increased dramatically in recent years, because improved software packages allow slides and graphic design to be prepared on a personal computer. Guidance on the latest packages is freely available, and most conference organisers will advise on acceptable standards of presentation.

The information can be presented to community groups at their regular meetings or training sessions, either in-house or externally. Internal activities can also include open days and associated

demonstrations at which invited visitors or the general public can gain information about monitoring activities.

### 7.4.3. Internet Web Pages

The use of Internet web pages is a powerful means of making data available to a very wide user audience. Many agencies and industries are now making reports and monitoring data available this way. However, there is concern about how the data might be used. It is pointless to simply list the monitoring data without also providing associated professional interpretation, because the data could be given potentially misleading interpretation by non-professionals. The same will apply to reporting in the media.

### 7.4.4. Film and Video Presentations

Film or, more commonly, video presentations are complex and expensive ways of reporting on a monitoring study. They are usually unable to convey sufficient technical detail, and are more useful for publicity than for communicating the detail of scientific findings.

### 7.4.5. Media Reporting

Media reports are important for disseminating general information about a monitoring program, and can come about in a structured (controlled) or unstructured way. In a structured way, the information is made available via a media release that has been produced on behalf of the organisation undertaking the study and/or the client of the study. This release is usually the responsibility of an officer with training in communicating information. Media releases will name a contact officer for further information, generally the communications officer and possibly a senior person responsible for the report or program. It is highly desirable that personnel listed on press releases or otherwise involved in contacts with the media should have training in such activities.

Irresponsible, unstructured reporting of environmental findings can lead to undue public anxiety and the wasted effort of agencies in response to political pressures, readdressing issues that have already been covered as part of the investigation but incorrectly reported. Personnel being interviewed by the print media should ask to view a transcript of the article before it is published.